WHAT IS CLAIMED IS:

1. A method of effecting degeneration of a somatic plant tissue of a plant, the method comprising the step of expressing in cells of the somatic plant tissue a heterologous protein capable of binding a plant essential factor, wherein said step of expressing said heterologous protein is effected in a fashion, so as to lead to depletion of said essential factor such that plant viability is maintained, while at the same time, degeneration of the somatic plant tissue is effected.

2. The method of claim 1, wherein said fashion is selected according to at least one criterion selected from the group consisting of:

(i) a level of expression of said heterologous protein;

(ii) a distribution of said heterologous protein in said plant tissue;

(iii) binding activity of said heterologous protein toward said plant essential factor;

(iv) abundance and distribution of said plant essential factor in said cells; and

(v) a level of said factor externally provided to the somatic plant tissue.

3. The method of claim 1, further comprising the step of introducing into the cells of the degenerated somatic plant tissue a neutralizing agent, said neutralizing agent being capable of reversing said depletion of said plant essential factor to thereby lead to a regeneration of degenerated somatic plant tissue.

4. The method of claim 1, wherein said plant essential factor is biotin.

5. The method of claim 1, wherein said plant essential factor is selected from the group consisting of an iron ion, thiamin, a calcium ion, and a zinc ion.

6. The method of claim 1, wherein said heterologous protein is a biotin binding protein.

Sub A2 7. The transgenic plant of claim 16, wherein said heterologous protein is selected from the group consisting of avidin, streptavidin and biotin binding derivatives and modificants thereof.

8. The method of claim 1, wherein said heterologous protein is selected from the group consisting of an iron binding protein, a zinc binding protein, a calcium binding protein and a thiamin binding protein.

Sub A3 9. The method of claim 1, wherein said heterologous protein is expressed within the cytoplasm of said cells of the somatic plant tissue so as to lead to said depletion of said essential factor present within said cytoplasm, such that said plant viability is maintained, while at the same time, said degeneration of the somatic plant tissue is effected.

10. The method of claim 1, wherein said heterologous protein is expressed within a DNA containing organelle of said cells of the somatic plant tissue so as to lead to said depletion of said essential factor present within said DNA containing organelle, such that said plant viability is

maintained, while at the same time, said degeneration of the somatic plant tissue is effected.

11. The method of claim 1, wherein said heterologous protein includes a leader peptide capable of self targeting into a DNA containing organelle, such that when said heterologous protein is expressed within the cytoplasm of said cells of the somatic plant tissue said leader peptide directs said heterologous protein into said DNA containing organelle, so as to lead to said depletion of said essential factor present within said DNA containing organelle such that said plant viability is maintained, while at the same time, said degeneration of the somatic plant tissue is effected.

12. The method of claim 1, wherein said heterologous protein includes a signal peptide capable of targeting said heterologous protein into the endoplasmic reticulum.

13. The method of claim 1, wherein said degeneration of plant somatic tissue is effected for controlling a morphology of the plant.

14. The method of claim 1, wherein said degeneration of plant somatic tissue is effected for controlling a development of the plant.

15. The method of claim 3, wherein said step of introducing into said cells of said degenerated somatic plant tissue a neutralizing agent, includes selectively expressing within said cells of the somatic plant tissue a neutralizing agent selected from the group consisting of antisense RNA and a ribozyme to thereby prevent the expression of at least a portion of said heterologous protein so as to at least partially reverse said depletion of said

plant essential factor and to thereby lead to said regeneration of said degenerated somatic tissue.

16. The method of claim 3, wherein said step of introducing into said cells of said degenerated somatic plant tissue a neutralizing agent, includes selectively expressing within said cells of the somatic plant tissue an antagonist protein capable of preventing or interrupting said binding of said heterologous protein with said plant essential factor, so as to at least partially reverse said depletion of said plant essential factor and to thereby lead to regeneration of said degenerated somatic plant tissue.

17. The method of claim 3, wherein said neutralizing factor is said plant essential factor and said step of introducing said neutralizing agent into said cells of said degenerated somatic plant tissue includes externally applying said plant essential factor to at least a portion of said degenerated somatic plant tissue, to thereby lead to at least partial regeneration of said degenerated somatic plant tissue.

18. A transgenic plant expressing a heterologous protein capable of binding a plant essential factor, wherein expressing said heterologous protein is effected in a fashion, so as to lead to a depletion of said essential factor such that plant viability is maintained, while at the same time, degeneration of somatic plant tissue of the transgenic plant is effected.

19. The transgenic plant of claim 18, wherein said fashion is selected according to at least one criterion selected from the group consisting of:

(i) a level of expression of said heterologous protein;

(ii) a distribution of said heterologous protein in said plant tissue;

(iii) binding activity of said heterologous protein toward said essential factor;

(iv) abundance and distribution of said essential factor in said cells; and

(v) a level of said factor externally provided to said somatic plant tissue.

20. The transgenic plant of claim 18, wherein said plant essential factor is biotin.

21. The transgenic plant of claim 18, wherein said heterologous protein is a biotin binding protein.

22. The transgenic plant of claim 18, wherein said heterologous protein is selected from the group consisting of avidin, streptavidin and biotin binding derivatives and modificants thereof.

23. The transgenic plant of claim 18, wherein said heterologous protein is selected from the group consisting of an iron binding protein, a zinc binding protein, a calcium binding protein and a thiamin binding protein.

24. The transgenic plant of claim 18, wherein said heterologous protein is expressed within a cytoplasm of somatic cells of the transgenic plant, so as to lead to said depletion of said essential factor present within said cytoplasm, such that said plant viability is maintained, while at the same time, said degeneration of said somatic cells is effected.

25. The transgenic plant of claim 18, wherein said heterologous protein is expressed within a DNA containing organelle of somatic cells of the transgenic plant, so as to lead to said depletion of said essential factor present within said DNA containing organelle, such that said plant viability is maintained, while at the same time, said degeneration of said somatic cells is effected.

26. The transgenic plant of claim 18, wherein said heterologous protein is targeted into a DNA containing organelle of somatic cells of the transgenic plant following expression thereof within a cytoplasm of said somatic cells, so as to lead to said depletion of said essential factor present within said DNA containing organelle, such that said plant viability is maintained, while at the same time, said degeneration of said somatic cells is ~~effected.~~

27. The transgenic plant of claim 18, wherein said heterologous protein includes a signal peptide capable of targeting said heterologous protein into the endoplasmic reticulum.

28. A transgenic plant comprising somatic plant cells being transformed with an expression cassette including a first polynucleotide segment under a transcriptional control of a plant promoter, said first polynucleotide segment encoding a heterologous protein which binds a sufficient amount of a plant essential factor to thereby cause degeneration of a somatic plant tissue, while at the same time, maintain plant viability.

29. The transgenic plant of claim 28, wherein said plant essential factor is biotin.

30. The transgenic plant of claim 28, wherein said plant essential factor is selected from the group consisting of an iron ion, thiamin, a calcium ion and a zinc ion.

31. The transgenic plant of claim 28, wherein said promoter is a plant derived promoter and a plant virus derived promoter.

32. The transgenic plant of claim 28, wherein said plant promoter is selected from the group consisting of a constitutive promoter, a tissue specific promoter, a developmentally regulated promoter and an inducible promoter.

33. The transgenic plant of claim 28, wherein said heterologous protein is selected from the group consisting of avidin, streptavidin and biotin binding derivatives and modificants thereof.

34. The transgenic plant of claim 28, wherein said heterologous protein is selected from the group consisting of an iron binding protein, a zinc binding protein, a calcium binding protein and a thiamin binding protein.

35. The transgenic plant of claim 28, wherein said expression cassette transforms a genome of a DNA containing organelle of said somatic plant cells such that said heterologous protein is expressed within said DNA containing organelle, so as to lead to said depletion of said essential factor present within said DNA containing organelle, such that degeneration of said somatic plant tissue is effected.

36. The transgenic plant of claim 28, wherein said expression cassette further includes a second polynucleotide segment coding for a leader peptide capable of self targeting into a DNA containing organelle, said second polynucleotide segment being in frame to said first polynucleotide segment, such that when said expression cassette is expressed within a cytoplasm of said somatic plant cells, said leader peptide directs said heterologous protein into said DNA containing organelle, so as to lead to said depletion of said essential factor present within said DNA containing organelle, such that said degeneration of said somatic plant tissue is effected.

37. The transgenic plant of claim 28, wherein said heterologous protein includes a signal peptide capable of targeting said heterologous protein into the endoplasmic reticulum.

Sub a12 38. The transgenic plant of claim 28, wherein said heterologous protein is expressed within a cytoplasm of said somatic plant cells, so as to lead to said depletion of said essential factor present within said cytoplasm, such that said degeneration of said somatic plant tissue is effected.

39. A method for selectively controlling a morphology of a plant, the method comprising said steps of:

(a) expressing in somatic cells of the plant a heterologous protein capable of binding a plant essential factor, wherein said step of expressing said heterologous protein is effected in a fashion so as to lead to a depletion of said essential factor such that plant viability is maintained, while at the same time, degeneration of said somatic cells is effected; and

(b) introducing into a selected portion of the degenerated somatic cells of the plant a neutralizing agent, said neutralizing agent being capable of at least partially reversing said depletion of said plant essential factor, to thereby lead to regeneration of said selective portion of said degenerated somatic cells, so as to selectively control the morphology of the plant.

40. The method of claim 39, wherein said fashion is selected according to at least one criterion selected from the group consisting of:

(i) a level of expression of said heterologous protein;

(ii) a distribution of said heterologous protein in said plant tissue;

(iii) binding activity of said heterologous protein toward said essential factor;

(iv) abundance and distribution of said essential factor in said cells; and

(v) a level of said factor externally provided to said somatic plant tissue.

41. The method of claim 39, wherein said plant essential factor is biotin.

42. The method of claim 39, wherein said plant essential factor is selected from the group consisting of an iron ion, thiamin, a calcium ion and a zinc ion.

43. The method of claim 39, wherein said heterologous protein is a biotin binding protein.

44. The method of claim 39, wherein said heterologous protein is selected from the group consisting of avidin, streptavidin and biotin binding derivatives and modificants thereof.

45. The method of claim 39, wherein said heterologous protein is selected from the group consisting of an iron binding protein, a zinc binding protein, a calcium binding protein and a thiamin binding protein

46. The method of claim 39, wherein said heterologous protein is expressed within a cytoplasm of said somatic cells, so as to lead to said depletion of said essential factor present within said cytoplasm, such that plant viability is maintained, while at the same time, degeneration of said somatic cells is effected.

47. The method of claim 39, wherein said heterologous protein is expressed within a DNA containing organelle of said somatic cells so as to lead to said depletion of said essential factor present within said DNA containing organelle, such that plant viability is maintained, while at the same time, degeneration of said somatic cells is effected.

48. The method of claim 39, wherein said heterologous protein includes a leader peptide capable of self targeting into a DNA containing organelle, such that when said heterologous protein is expressed within the cytoplasm of said somatic cells said leader peptide directs said heterologous protein into said DNA containing organelle, so as to lead to said depletion of said essential factor present within said DNA containing organelle such that plant viability is maintained, while at the same time, degeneration of said somatic cells is effected.

49. The method of claim 39, wherein said heterologous protein includes a signal peptide capable of targeting said heterologous protein into the endoplasmic reticulum.

50. A plant comprising somatic tissue expressing a heterologous protein being bound to a plant essential factor, such that unbound and active form of said plant essential factor is depleted from said somatic plant tissue, thereby effecting degeneration of said somatic plant tissue.

51. A nucleic acid expression cassette comprising in a 5' to 3' orientation a first polynucleotide segment including a plant promoter sequence, a second polynucleotide segment coding for a plant leader peptide for directing a protein into a plant cell DNA containing organelle and a third polynucleotide segment, being in frame with said second polynucleotide segment, and coding for a heterologous protein capable of binding a plant essential factor.

52. A nucleic acid expression cassette comprising in a 5' to 3' orientation a first polynucleotide segment including a plant promoter sequence, a second polynucleotide segment coding for a plant signal peptide for directing a protein into the endoplasmic reticulum and a third polynucleotide segment, being in frame with said second polynucleotide segment, and coding for a heterologous protein capable of binding a plant essential factor.

53. A nucleic acid expression cassette comprising in a 5' to 3' orientation a first polynucleotide segment including a plant promoter sequence, a second polynucleotide segment coding for a plant signal

peptide, a third polynucleotide segment coding for a bacterial signal peptide and a fourth polynucleotide segment coding for a biotin binding protein, said second, third and fourth polynucleotide segments being in frame.